



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/748,306   | 12/29/2003  | Qinghua Li           | 42P18462            | 7983             |
| 8791 7590 04/15/2008<br>BLAKELY SOKOLOFF TAYLOR & ZAFMAN<br>1279 OAKMEAD PARKWAY<br>SUNNYVALE, CA 94085-4040 |             |                      |                     |                  |
| EXAMINER   |             |                      |                     |                  |
| PATEL, JAY P   |             |                      |                     |                  |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
| 2619   |             |                      |                     |                  |
| MAIL DATE  |             | DELIVERY MODE        |                     |                  |
| 04/15/2008   |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/748,306

**Applicant(s)**

LI ET AL.

**Examiner**

JAY P. PATEL

**Art Unit**

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 11-14, 21 23-26, 34-35, 37-39 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Li (US Patent 7103115 B2).
3. In regards to claim 1, Li shows in figure 3, a packet format for an OFDM sub-band (generating a packet for transmission). Furthermore, figure 1 shows a block diagram of the OFDM system inclusive of transmission antennas 130 (transmission via a select one or more antenna(e) of a transmitting device).
4. Furthermore, the signal in figure 3 is inclusive of training symbols 320 (including with the generated packet one or more training symbols) and payload symbols 330 (wherein the packet is generated for purposes other than the transmission of the training symbols). Figure 5 is a block diagram of the training symbol generator 430 in figure 4; the controller 510 can command input/output interface 590 to provide N sets of training symbols relating to N separate transmit antennas (at least one training symbol each for at least a subset of the number of antenna(e) of the transmitting device).
5. In regards to claim 2, the communication signal in figure 3 is inclusive of payload symbols 330 (a data packet).

6. In regards to claim 11, figure 1 shows a block diagram of the OFDM system inclusive of transmission antennas 130 which transmit the RF signals (such as the OFDM signal of figure 3) (see column 3, lines 14-26).
7. In regards to claim 12, figure 1 is also inclusive of receivers 150 (receive at least a packet from the remote device). Furthermore, training symbols 320, can be any set of symbols suitable for training an equalizer (i.e. equalizer 160 of figure 1) (the packet is used as a training symbol) (see column 5, lines 51-55).
8. Furthermore, figure 6 is a block diagram of the equalizer 160 from figure 1. Channel estimator 620 can extract various sets of expected patterns of training symbols from a database to derive the correlations used to determine channel characteristics (perform one or more of training and calibration of one or more transmit chains based, at least in part on channel performance information associated with the received training symbol(s)) (see column 10, lines 31-38).
- 9.
10. In regards to claim 13, Li shows in figure 3, a packet format for an OFDM sub-band (generating a packet for transmission). Furthermore, figure 1 shows a block diagram of the OFDM system inclusive of transmission antennas 130 (transmission via a select one or more antenna(e) of a transmitting device).
11. Furthermore, the signal in figure 3 is inclusive of training symbols 320 (including with the generated packet one or more training symbols) and payload symbols 330 (wherein the packet is generated for purposes other than the transmission of the training symbols). Figure 5 is a block diagram of the training symbol generator 430 in

figure 4; the controller 510 can command input/output interface 590 to provide N sets of training symbols relating to N separate transmit antennas (at least one training symbol each for at least a subset of the number of antenna(e) of the transmitting device).

12. In regards to claim 14, the communication signal in figure 3 is inclusive of payload symbols 330 (a data packet).

13. In regards to claim 21, figure 1 is inclusive of transmission antennas 130.

14. In regards to claim 23, figure 1 shows a block diagram of the OFDM system inclusive of transmission antennas 130 which transmit the RF signals (such as the OFDM signal of figure 3) (see column 3, lines 14-26).

15. In regards to claim 24, figure 1 is also inclusive of receivers 150 (receive at least a packet from the remote device). Furthermore, training symbols 320, can be any set of symbols suitable for training an equalizer (i.e. equalizer 160 of figure 1) (the packet is used as a training symbol) (see column 5, lines 51-55).

16. Furthermore, figure 6 is a block diagram of the equalizer 160 from figure 1. Channel estimator 620 can extract various sets of expected patterns of training symbols from a database to derive the correlations used to determine channel characteristics (perform one or more of training and calibration of one or more transmit chains based, at least in part on channel performance information associated with the received training symbol(s)) (see column 10, lines 31-38).

17. In regards to claim 25, Li shows in figure 3, a packet format for an OFDM sub-band (generating a packet for transmission). Furthermore, figure 1 shows a block

diagram of the OFDM system inclusive of transmission antennas 130 (transmission via a select one or more antenna(e) of a transmitting device).

18. Furthermore, the signal in figure 3 is inclusive of training symbols 320 (including with the generated packet one or more training symbols) and payload symbols 330 (wherein the packet is generated for purposes other than the transmission of the training symbols). Figure 5 is a block diagram of the training symbol generator 430 in figure 4; the controller 510 can command input/output interface 590 to provide N sets of training symbols relating to N separate transmit antennas (at least one training symbol each for at least a subset of the number of antenna(e) of the transmitting device).

19. In regards to claim 26, the communication signal in figure 3 is inclusive of payload symbols 330 (a data packet).

20. In regards to claim 34, figure 1 is inclusive of transmitters 120 between an encoder 110 and transmit antenna(e) 130.

21. In regards to claim 35, figure 1 is also inclusive of receivers 150 between antenna(e) 140 and equalizer 160.

22. In regards to claim 37, Li shows in figure 3, a packet format for an OFDM sub-band (generating a packet for transmission). Furthermore, figure 1 shows a block diagram of the OFDM system inclusive of transmission antennas 130 (transmission via a select one or more antenna(e) of a transmitting device).

23. Furthermore, the signal in figure 3 is inclusive of training symbols 320 (including with the generated packet one or more training symbols) and payload symbols 330 (wherein the packet is generated for purposes other than the transmission of the

training symbols). Figure 5 is a block diagram of the training symbol generator 430 in figure 4; the controller 510 can command input/output interface 590 to provide N sets of training symbols relating to N separate transmit antennas (at least one training symbol each for at least a subset of the number of antenna(e) of the transmitting device). Figure 5 is also inclusive of system memory 520 (a storage medium in which to store at least executable content).

24. In regards to claim 38, the communication signal in figure 3 is inclusive of payload symbols 330 (a data packet).
25. In regards to claim 39, figure 1 is inclusive of transmitters 120 between an encoder 110 and transmit antenna(e) 130.
26. In regards to claim 41, figure 1 is also inclusive of receivers 150 between antenna(e) 140 and equalizer 160.

***Claim Rejections - 35 USC § 103***

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. Claims 3-4, 9, 15-16, 27-28 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent 7103115 B2), in view of Hammerschmidt (US Publication 2004/0151146 A1).
29. In regards to claim 3, Li teaches all the limitations of parent claims 1 and 2 as stated above. Li fails to teach a RTS or a CTS packet inclusive of training symbols.

30. Hammerschmidt however, teaches the above-mentioned limitation.

Hammerschmidt discloses with regards to prior art figure 1 that training symbols may be inserted in preambles of OFDM packets (see paragraph 9) and in with regards to figure 13 shows channel reservation using OFDM service packets RTS and CTS.

31. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

32. In regards to claim 4, Li in combination with Hammerschmidt teaches all the limitations of parent claims 1, 2 and 3. Li however fails to teach transmitting the CTS or RTS packet via at one of the selected antenna. Hammerschmidt however teaches that training symbols may be inserted in preambles of OFDM packets (see paragraph 9).

Therefore, since the packet is received with training symbols in the preamble, Hammerschmidt also reads on the packet being transmitted via the same antenna 124.

33. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state



information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

34. In regards to claim 9, Li in combination with Hammerschmidt teaches all the limitations of parent claims 1, 2 and 3. Li however fails to teach transmitting the CTS or RTS packet inclusive of the training symbols via at one of the selected antenna. Hammerschmidt however teaches that training symbols may be inserted in preambles of OFDM packets (see paragraph 9). Therefore, since the packet is received with training symbols in the preamble, Hammerschmidt also reads on the packet being transmitted via the same antenna 124.

35. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

36. In regards to claim 15, Li teaches all the limitations of parent claims 13 and 14 as stated above. Li fails to teach a RTS or a CTS packet inclusive of training symbols.

37. Hammerschmidt however, teaches the above-mentioned limitation. Hammerschmidt discloses with regards to prior art figure 1 that training symbols may be inserted in preambles of OFDM packets (see paragraph 9) and in with regards to figure 13 shows channel reservation using OFDM service packets RTS and CTS.

38. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

39. In regards to claim 16, Li in combination with Hammerschmidt teaches all the limitations of parent claims 13, 14 and 15. Li however fails to teach transmitting the CTS or RTS packet via at one of the selected antenna. Hammerschmidt however teaches that training symbols may be inserted in preambles of OFDM packets (see paragraph 9). Therefore, since the packet is received with training symbols in the preamble, Hammerschmidt also reads on the packet being transmitted via the same antenna 124.

40. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

41. In regards to claim 27, Li teaches all the limitations of parent claims 25 and 26 as stated above. Li fails to teach a RTS or a CTS packet inclusive of training symbols.

42. Hammerschmidt however, teaches the above-mentioned limitation.

Hammerschmidt discloses with regards to prior art figure 1 that training symbols may be inserted in preambles of OFDM packets (see paragraph 9) and in with regards to figure 13 shows channel reservation using OFDM service packets RTS and CTS.

43. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

44. In regards to claim 28, Li in combination with Hammerschmidt teaches all the limitations of parent claims 25, 26 and 27. Li however fails to teach transmitting the CTS or RTS packet via at one of the selected antenna. Hammerschmidt however teaches that training symbols may be inserted in preambles of OFDM packets (see paragraph 9). Therefore, since the packet is received with training symbols in the preamble, Hammerschmidt also reads on the packet being transmitted via the same antenna 124.

45. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS

Art Unit: 2619

with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

46.

47. In regards to claim 36, Li teaches all the limitations of parent claims 25-26 and 35. Li however, fails to teach using the same antennas for both transmission and reception.

48. Hammerschmidt however shows the above-mentioned limitation in prior art figure 1 where antenna 124 can be used for reception or transmission via the use of a switch 126.

49. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an OFDM service packet such as a RTS and CTS with preamble inclusive of training symbols as disclosed by Hammerschmidt in the OFDM transmission system taught by Li. The motivation to do so would be to derive channel state information for OFDM sub-channels and use the channel state information to process the OFDM packets received via the antennas (see Hammerschmidt, paragraph 11).

50. Claim 22, 29-32 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent 7103115 B2), in view of Weber et al. (US Patent 7212788 B2).

51. In regards to claim 22, Li teaches all the limitations of parent claims 13-14 and 21. Li however fails to particularly teach providing comparing a performance metric at a receiver to select the best transmit antenna, where the performance metric is SNR. Weber on the other hand, teaches the above-mentioned limitations

Weber teaches in prior art figure 1, a baseband/mixer unit 140 that includes processing for comparing the number of packet errors/SNR for each of antenna (providing a performance metric at a receiver when compared against other transmit antenna options) (see column 1, lines 42-46). The antenna with the least number of errors or the highest SNR is selected for broadcast (selecting the antenna with the best performance metric at the receiver, where the performance metric is SNR) (see column 1, lines 46-47).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the selection of a transmit antenna based on the received SNR at taught by Weber in the OFDM transmission system taught by Li. The motivation to do so would be to allow for selection of an antenna with the best performance.

52. In regards to claims 29-31, Li teaches all the limitations of parent claims 25-26. Li however fails to particularly teach providing comparing a performance metric at a receiver to select the best transmit antenna, where the performance metric is SNR. Weber on the other hand, teaches the above-mentioned limitations

In regards to claims 29-31, Weber teaches in prior art figure 1, a baseband/mixer unit 140 that includes processing for comparing the number of packet errors/SNR for

each of antenna (providing a performance metric at a receiver when compared against other transmit antenna options) (see column 1, lines 42-46). The antenna with the least number of errors or the highest SNR is selected for broadcast (selecting the antenna with the best performance metric at the receiver, where the performance metric is SNR) (see column 1, lines 46-47).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the selection of a transmit antenna based on the received SNR at taught by Weber in the OFDM transmission system taught by Li. The motivation to do so would be to allow for selection of an antenna with the best performance.

In regards to claim 32, figure 1 in Li is inclusive of transmit antennas 130.  
53. In regards to claim 40, Li teaches all the limitations of parent claims 37-39. Li however fails to particularly teach providing comparing a performance metric at a receiver to select the best transmit antenna, where the performance metric is SNR. Weber on the other hand, teaches the above-mentioned limitations

In regards to claim 40, Weber teaches in prior art figure 1, a baseband/mixer unit 140 that includes processing for comparing the number of packet errors/SNR for each of antenna (providing a performance metric at a receiver when compared against other transmit antenna options) (see column 1, lines 42-46). The antenna with the least number of errors or the highest SNR is selected for broadcast (selecting the antenna with the best performance metric at the receiver, where the performance metric is SNR) (see column 1, lines 46-47).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the selection of a transmit antenna based on the received SNR at taught by Weber in the OFDM transmission system taught by Li. The motivation to do so would be to allow for selection of an antenna with the best performance.

54. Claims 5-7, 10 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent 7103115 B2), in view of Hammerschmidt (US Publication 2004/0151146 A1) further in view of Weber et al. (US Patent 7212788 B2).

55. In regards to claims 5-7 and 10, Li either alone or in combination with Hammerschmidt teaches all the limitations of parent claims 1-4 and 9. Neither Li nor Hammerschmidt however particularly teach providing comparing a performance metric at a receiver to select the best transmit antenna, where the performance metric is SNR. Weber on the other hand, teaches the above-mentioned limitations

In regards to claims 5-6 and 10, Weber teaches in prior art figure 1, a baseband/mixer unit 140 that includes processing for comparing the number of packet errors/SNR for each of antenna (providing a performance metric at a receiver when compared against other transmit antenna options) (see column 1, lines 42-46). The antenna with the least number of errors or the highest SNR is selected for broadcast (selecting the antenna with the best performance metric at the receiver, where the performance metric is SNR) (see column 1, lines 46-47).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the selection of a transmit antenna based on the received SNR at taught by Weber in the OFDM transmission systems taught by Li and Hammerschmidt. The motivation to do so would be to allow for selection of an antenna with the best performance.

In regards to claim 7, figure 1 in Li is inclusive of transmit antennas 130.

In regards to claim 17, Li either alone or in combination with Hammerschmidt teaches all the limitations of parent claims 13-16. Neither Li nor Hammerschmidt however particularly teach providing comparing a performance metric at a receiver to select the best transmit antenna.

In regards to claim 17, Weber teaches in prior art figure 1, a baseband/mixer unit 140 that includes processing for comparing the number of packet errors/SNR for each of antenna (providing a performance metric at a receiver when compared against other transmit antenna options) (see column 1, lines 42-46).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the selection of a transmit antenna based on the received SNR at taught by Weber in the OFDM transmission systems taught by Li and Hammerschmidt. The motivation to do so would be to allow for selection of an antenna with the best performance.

In regards to claim 18, figure 1 in Li is inclusive of transmit antennas 130.



56. Claims 8, 19-20 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent 7103115 B2), in view of Hammerschmidt (US Publication 2004/0151146 A1) further in view of Weber et al. (US Patent 7212788 B2) further in view of Corbett et. al (US Patent 7239894 B2).

57. In regards to claim 8, Li either alone or in combination with Hammerschmidt and Weber teaches all the limitations of the parent claims. Neither of the above-mentioned references however teaches the concept of using a separate subset of transmission antennas for the handshaking and the data packets.

Corbett however teaches the above-mentioned concept with respect to omni-directional antenna 203 and directional antenna 204. Omni-directional antenna 203 can be used to receive a data notification signal indicating that a wireless device has data to send (RTS). The control module 205, then causes a directional beam of directional antenna 204 to be directed towards the location of the wireless device (see column 8, lines 49-64). The control module 205 can also cause antenna 203 to transmit a location request. Thus two different antennas are used to receive/transmit control information and payload information separately.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the concept of using two different antennas to transmit control and data information as taught by Corbett with the selection of a transmit antenna based on the received SNR as taught by Weber in the OFDM transmission systems taught by Li and Hammerschmidt. The motivation to do so would be to detect signal strength associated with the received communication.

58. In regards to claim 19, Li either alone or in combination with Hammerschmidt and Weber teaches all the limitations of the parent claims. Neither of the above-mentioned references however teach the concept of using a separate subset of transmission antennas for the handshaking and the data packets.

Corbett however teaches the above-mentioned concept with respect to omni-directional antenna 203 and directional antenna 204. Omni-directional antenna 203 can be used to receive a data notification signal indicating that a wireless device has data to send (RTS). The control module 205, then causes a directional beam of directional antenna 204 to be directed towards the location of the wireless device (see column 8, lines 49-64). The control module 205 can also cause antenna 203 to transmit a location request. Thus two different antennas are used to receive/transmit control information and payload information separately.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the concept of using two different antennas to transmit control and data information as taught by Corbett with the selection of a transmit antenna based on the received SNR as taught by Weber in the OFDM transmission systems taught by Li and Hammerschmidt. The motivation to do so would be to detect signal strength associated with the received communication.

In regards to claim 20, figure 1 in Li is inclusive of transmit antennas 130.

59. Claim 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent 7103115 B2), in view of Weber et al. (US Patent 7212788 B2) further in view of Corbett et. al (US Patent 7239894 B2).

60. In regards to claim 33, Li either alone or in combination with Weber teaches all the limitations of the parent claims. Neither of the above-mentioned references however teach the concept of using a separate subset of transmission antennas for the handshaking and the data packets.

Corbett however teaches the above-mentioned concept with respect to omni-directional antenna 203 and directional antenna 204. Omni-directional antenna 203 can be used to receive a data notification signal indicating that a wireless device has data to send (RTS). The control module 205, then causes a directional beam of directional antenna 204 to be directed towards the location of the wireless device (see column 8, lines 49-64). The control module 205 can also cause antenna 203 to transmit a location request. Thus two different antennas are used to receive/transmit control information and payload information separately.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the concept of using two different antennas to transmit control and data information as taught by Corbett with the selection of a transmit antenna based on the received SNR as taught by Weber in the OFDM transmission systems taught by Li. The motivation to do so would be to detect signal strength associated with the received communication.

### ***Response to Arguments***

61. Applicant's arguments with respect to the Walton reference have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAY P. PATEL whose telephone number is (571)272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jay P. Patel  
Examiner  
Art Unit 2619

/J. P. P./  
Examiner, Art Unit 2619

/Edan Orgad/

Art Unit: 2619

Supervisory Patent Examiner, Art Unit 2619